AUSTRALIAN MATHEMATICS COMPETITION
WARM-UP PAPER
INTERMEDIATE 7

Questions 1 - 4, 3 marks each

1. In the diagram, the value of x is

(A) 50　　　(B) 55　　　(C) 60　　　(D) 65　　　(E) 70
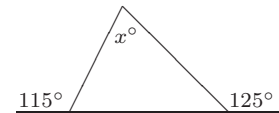
2. If $5n + 7 > 100$ and n is an integer, the minimum possible value of n is

(A) 18　　　　(B) 19　　　　(C) 20　　　　(D) 21　　　　(E) 22

3. A kilogram of a certain sweet contains from 24 to 30 sweets. The minimum weight, in kilograms, of 240 of these sweets is

(A) 7　　　　(B) 7.5　　　　(C) 8　　　　(D) 8.5　　　　(E) 10

4. Ann and Barbara share a \$250 prize in the ratio of $3 : 2$. Barbara's share is

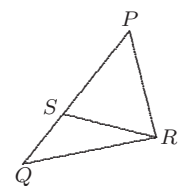(A) \$50　　　　(B) \$100　　　　(C) \$125　　　　(D) \$150　　　　(E) \$200

Questions 5 - 8, 4 marks each

5. Which is the greatest of the following numbers?

(A) $\dfrac{4}{0.4}$　　　(B) $\dfrac{4}{0.44}$　　　(C) $\dfrac{4}{(0.4)^2}$　　　(D) $\dfrac{4}{\sqrt{0.44}}$　　　(E) $\dfrac{4}{(0.44)^2}$
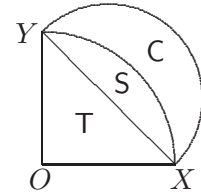
6. The triangle PRS is equilateral and its area is half that of the triangle PQR. What is the size, in degrees, of the angle PRQ?

(A) 75　　　(B) 80　　　(C) 90　　　(D) 100　　　(E) 120

7. OX, OY are radii of a circular quadrant. A semi-circle is drawn on XY as shown. T, S and C denote the resulting triangle, segment and crescent.

The ratio
$$\frac{\text{area T}}{\text{area C}}$$
equals

(A) $\dfrac{3}{\pi}$ (B) 1 (C) $\dfrac{13}{4\pi}$ (D) $\dfrac{7}{2\pi}$ (E) $\dfrac{15}{4\pi}$

8. A large watermelon weighs $20\,\text{kg}$, with 98% of its weight being water. It is left to stand in the sun, and some of the water evaporates so that now only 95% of its weight is water. What does it now weigh?

(A) $17\,\text{kg}$ (B) $19.4\,\text{kg}$ (C) $10\,\text{kg}$ (D) $19\,\text{kg}$ (E) $8\,\text{kg}$

Questions 9 - 10, 5 marks each

9. In the 5×5 square the numbers 1, 2, 3, 4, 5 are arranged in such a way that every number occurs precisely once in each row and precisely once in each column.

1	2			
				1
	x	4		
2		5		
	5			4

In the 5×5 square shown, the entry in the position marked with an x is

(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

10. In a soccer tournament eight teams play each other once, with two points awarded for a win, one point for a draw and zero for a loss. How many points must a team score to ensure that it is in the top four (ie has more points than at least four other teams)?

(A) 8 (B) 9 (C) 10 (D) 11 (E) 12